EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

VIRTAMOVE, CORP.,	§	
Plaintiff,	§	Case No. 2:24-cv-00093-JRG
	§	(Lead Case)
v.	§	
	§	
HEWLETT PACKARD ENTERPRISE	§	JURY TRIAL DEMANDED
COMPANY,	§	
Defendant.	§	
	§	
	§	
VIRTAMOVE, CORP.,	§	
Plaintiff,	§	Case No. 2:24-CV-00064-JRG
	§	(Member Case)
v.	§	
	§	
INTERNATIONAL BUSINESS	§	JURY TRIAL DEMANDED
MACHINES	§	
CORP.,	§	
Defendant.	§	
	§	

EXPERT INVALIDITY REPORT OF
SAM MALEK, PH.D
REGARDING IBM'S PATENTS

By: _____   Date: June 23, 2025

    Sam Malek, Ph.D.

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is an example of Barboy's interception layer intercepting calls from a requesting

application to the host operating system and replacing the calls with registry keys/file

paths from the encapsulated file system scheme appropriate for the requesting

application.   Barboy's independent claims also recite the idea of interception for

example, by "managing" the applications of certain "groups" (capsules) and

intercepting access requests by identifying the access request, selecting a version of

an element among the managed version of the elements, and processing the access

request using data representative of the selected version inside the capsule.

Exemplary files of an operating system that are requested include those shown in

Barboy Figure 2 under the OS Tree.

238.   Barboy discloses libraries and/or DLLs (dynamic linked libraries) are

examples of files that are created by applications and intercepted as part of the file

system requests in [0003], [0008], [0014], [0022], [0028], [0031], [0051], [0056],

[0059]–[0061], [0070], [0086], Figures 1–2, and 5 and claims 2, 15, 22, 30, and 34.

These are examples of "system libraries created by the one or more applications"

whose calls are intercepted, as recited in claim 4. For example, Barboy teaches that

"a DLL for the application [is] stored within the application's capsule 150." Barboy

at [0056]. Normally, "[i]nstallation of Application X also adds a DLL 254 in the

libraries directory" of the operating system tree in Figure 2, meaning that the library

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is created by the application's installation process. Applications may load libraries at other times. "For example, some executable files, when executed, load additional files into operational memory (e.g., dynamic link libraries, "DLL"s). Some of these libraries may be included with the operating system and commonly shared across installations. Other libraries may be custom libraries written for the application and included along side the executable file." Barboy at [0003]. Thus, the libraries are created by the applications at installation or at other times.

239.   Claim 4 of the '038 Patent might be interpreted in two different ways, that either 1) the calls are created by the one or more applications, or 2) that the system libraries are created by the one or more applications. I have addressed both possibilities above.

240.   An application's calls that would normally be directed to the application's DLL outside of this capsule are thus routed replaced with calls to the DLL inside this capsule. For example, "[F]or a file [like a library] being opened with read-only access, the version available within the capsule view is opened." Barboy at [0069]. This means that when there is a call to read system libraries created by Application X, this call will be intercepted, and the version of the DLL stored within the application capsule will be used instead. Barboy [0062] and [0063] also make it obvious that an application's calls that would normally be directed to the

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application's DLL outside of this capsule are thus routed replaced with calls to the DLL inside this capsule.

241.   Barboy discloses the claimed interception layer. Barboy describes, with respect to Figure 5, "the process of resolving a registry access or file system request begins by intercepting the request 510," meaning that the call is intercepted. Barboy at [0070]. "The requesting executable is then determined." *Id.* This means that the call was created by the application (the requesting executable). "If the capsule is isolated 540, an isolated view is used 542. . . . Using the appropriate view, the target of the request is located 546." Barboy at [0071]. Barboy had explained that for read requests, the appropriate view is the file inside the capsule. Barboy at [0069] ("For a file being opened for read-only access, the version available within the capsule view is opened"), [0071]. For write requests, the appropriate view is a new duplicate created inside the capsule. Barboy at [0066], [0068], [0072].

E.   '038 Patent Claim 5: The system according to claim 1 comprising an interception database configured to maintain mapping between host operating system resources inside the one or more isolated environments and outside.

242.   Barboy anticipates or renders obvious Claim 5.

243.   Barboy teaches that "embodiments and implementations store capsule contents and data in other formats. For example, instead of using special directories, data is located in databases. In another example, special archive files are used. In

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309.   Limitation 18[b] is worded the same as limitation 14[b].   For my analysis of limitation 18[b], I incorporate my analysis of limitation 14[b] above.

4.   Limitation 18[c]: "removing the one or more isolated environments as part of uninstalling the one or more applications"

310.   Barboy anticipates or renders obvious limitation 18[c], which is "removing the one or more isolated environments as part of uninstalling the one or more applications."

311.   Limitation 18[c] is worded the same as limitation 14[c]. For my analysis of limitation 18[c], I incorporate my analysis of limitation 14[c] above.

S.   '038 Patent Claim 19: The non-transitory computer readable storage medium of claim 18 comprising instructions for maintaining mapping between the system resources inside the one or more isolated environments and outside.

312.   Barboy anticipates or renders obvious claim 19.

313.   Claim 19 is like claim 5, which states, "The system according to claim 1 comprising an interception database configured to maintain mapping between host operating system resources inside the one or more isolated environments and outside." For my analysis of limitation 19, I incorporate my analysis of claim 5 above.

T.   '038 Patent Claim 20: The non-transitory computer readable storage medium of claim 19 comprising instructions for isolating the one or more applications from other applications and a host

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operating system while running within the one or more isolated environments.

314.   Barboy anticipates or renders obvious claim 20.

315.   Claim 20 is like claim 17, which states in part, "isolating the one or more applications from other applications and a host operating system while running within the one or more isolated environments." For my analysis of limitation 20, I incorporate my analysis of claim 17 above.

U.   Further opinions in view of Dr. Allen Havemose's testimony

316.   Dr. Allen Havemose at his deposition stated that the wherein clauses merely referred to capabilities of the system, as opposed to what the system needed to actually be programmed or configured to accomplish. *See* Havemose Dep. Tr. at 64:1-2 ("I mean these things are really capabilities, right, the whereins."); *id.* at 66:15-17 ("Yeah, I'd say the 'Wherein' clauses, including this one, are essentially capabilities."). I understand this is consistent with what IBM argued before the Court, that : "The claims merely require ***the system*** to have the capability to perform the recited installation/uninstallation. On their face, the claims are agnostic to how these actions are triggered, whether it is via an automated process or some unclaimed user input." IBM Opening Claim Construction Brief at 8 (emphasis in original).

317.   To the extent IBM is permitted to argue this broad interpretation of the claims, the wherein clauses of the asserted claims would have been disclosed and

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obvious in view of virtually any prior art computing systems, because a POSITA would have been able to provide those computing systems with instructions via user inputs to cause those systems to perform the claimed functionality. That is precisely what Dr. Havemose did in building prototypes of his purported invention. *See* Havemose Dep. Tr. at 31:18-43:7, 66:24-69:4 (describing Dr. Havemose's prototype and its development, which were built on Windows Server and Linux systems which "had the capability to run and execute the code that [Dr. Havemose] provided them to perform [his] invention"). Dr. Havemose further agreed that "the techniques that [he] developed were capable of being performed on at least some Windows and Linux systems that existed before [he] came up with those techniques." Havemose Dep. Tr. at 27:3-9 ("Yeah, I believe that's a good, general way of saying it.").

318.   A POSITA would thus, at least under Dr. Havemose's and IBM's claim interpretation, found it obvious to use pre-existing Windows Server and Linux versions that were capable of performing the functionality recited in the "wherein" clauses of the Havemose patents in combination with Barboy. These were known, pre-existing, and widely used operating systems, which would have disclosed and rendered obvious IBM and Dr. Havemose's interpretation of the "wherein" clauses of the Havemose patents.

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X.   Havemose Patent 8,943,500 is Obvious in view of Barboy

319.   As I explain below, Barboy discloses or at least makes obvious each element of claims 1–20, and thus renders these claims invalid under 35 U.S.C. § 103. For the analysis of any dependent claim, I may refer back to my analysis of the independent claim. For the analysis of the any claim elements, I may refer to analysis of a more specific dependent claim.

A.   '500 Patent Claim 1

1.   Preamble

320.   The preamble of claim 1 recites: "A system, comprising…" This is the same preamble as in claim 1 of the '038 Patent. For my analysis of the '500 Patent preamble, I incorporate my analysis of the '038 Patent preamble.

2.   <u>Limitation 1[a]: "one or more central processing units; and"</u>

321.   Barboy discloses limitation 1[a], which is "one or more central processing units." This is the same as limitation 1[a] of the '038 Patent. For my analysis of the '500 Patent limitation 1[a], I incorporate my analysis of the '038 Patent limitation 1[a].

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370.   Limitation 18[c] is worded the same as limitation 14[d]. For my analysis of limitation 18[d], I incorporate my analysis of limitation 14[d] above.

5.   Limitation 18[d]: "storing the one or more isolated environments for retrieval at a later time after the one or more applications are uninstalled."

371.   Barboy anticipates or renders obvious limitation 18[d], which is "storing the one or more isolated environments for retrieval at a later time after the one or more applications are uninstalled."

372.   Limitation 18[d] is worded the same as limitation 14[d]. For my analysis of limitation 14[c], I incorporate my analysis of limitation 14[c] above.

S.   '500 Patent Claim 19

373.   Barboy anticipates or renders obvious Claim 19, which recites: "The non-transitory computer readable storage medium of claim 18 comprising instructions for maintaining mapping between the system resources inside the one or more isolated environments and outside." For the dependency, I incorporate my analysis of claim 18 of the '500 Patent. This rest of this claim is the same as in claim 19 of the '038 Patent, which states, "comprising instructions for maintaining mapping between the system resources inside the one or more isolated environments and outside." For the rest of claim 19 of the '500 Patent, I incorporate my analysis of the '038 Patent claim 19.

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T.   '500 Patent Claim 20

374.   Barboy anticipates or renders obvious Claim 20, which recites: "The non-transitory computer readable storage medium of claim 19 comprising instructions for isolating the one or more applications from other applications and a host operating system while running within the one or more isolated environments." For the dependency, I incorporate my analysis of claim 19 of the '500 Patent. This rest of this claim is the same as in claim 20 of the '038 Patent, which states, "comprising instructions for isolating the one or more applications from other applications and a host operating system while running within the one or more isolated environments." For the rest of claim 20 of the '500 Patent, I incorporate my analysis of the '038 Patent claim 20.

U.   Further opinions in view of Dr. Allen Havemose's testimony

375.   Dr. Allen Havemose at his deposition stated that the wherein clauses merely referred to capabilities of the system, as opposed to what the system needed to actually be programmed or configured to accomplish. *See* Havemose Dep. Tr. at 64:1-2 ("I mean these things are really capabilities, right, the whereins."); *id.* at 66:15-17 ("Yeah, I'd say the 'Wherein' clauses, including this one, are essentially capabilities."). I understand this is consistent with what IBM argued before the Court, that : "The claims merely require ***the system*** to have the capability to perform

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the recited installation/uninstallation. On their face, the claims are agnostic to how these actions are triggered, whether it is via an automated process or some unclaimed user input." IBM Opening Claim Construction Brief at 8 (emphasis in original).

376.   To the extent IBM is permitted to argue this broad interpretation of the claims, the wherein clauses of the asserted claims would have been disclosed and obvious in view of virtually any prior art computing systems, because a POSITA would have been able to provide those computing systems with instructions via user inputs to cause those systems to perform the claimed functionality. That is precisely what Dr. Havemose did in building prototypes of his purported invention. *See* Havemose Dep. Tr. at 31:18-43:7, 66:24-69:4 (describing Dr. Havemose's prototype and its development, which were built on Windows Server and Linux systems which "had the capability to run and execute the code that [Dr. Havemose] provided them to perform [his] invention"). Dr. Havemose further agreed that "the techniques that [he] developed were capable of being performed on at least some Windows and Linux systems that existed before [he] came up with those techniques." Havemose Dep. Tr. at 27:3-9 ("Yeah, I believe that's a good, general way of saying it.").

377.   A POSITA would thus, at least under Dr. Havemose's and IBM's claim interpretation, found it obvious to use pre-existing Windows Server and Linux versions that were capable of performing the functionality recited in the "wherein"

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clauses of the Havemose patents in combination with Barboy. These were known,
pre-existing, and widely used operating systems, which would have disclosed and
rendered obvious IBM and Dr. Havemose's interpretation of the "wherein" clauses
of the Havemose patents.

XI.   Havemose Patent 10,606,634 is Obvious in view of Barboy

378.   As I explain below, Barboy discloses or at least makes obvious each
element of claims 1–20, and thus renders these claims invalid under 35 U.S.C. § 103.
For the analysis of any dependent claim, I may refer back to my analysis of the
independent claim.   For the analysis of the any claim elements, I may refer to
analysis of a more specific dependent claim.

A.   '634 Patent Claim 1

1.   Preamble

379.   The preamble of claim 1 recites: "A system, comprising…" This is the
same preamble as in claim 1 of the '038 Patent. For my analysis of the '634 Patent
preamble, I incorporate my analysis of the '038 Patent preamble.

2.   Limitation 1[a]: "one or more central processing units; and"

380.   Barboy discloses limitation 1[a], which is "one or more central
processing units." This is the same as limitation 1[a] of the '038 Patent. For my

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analysis of the '634 Patent limitation 1[a], I incorporate my analysis of the '038

Patent limitation 1[a].

3.   Limitation 1[b]: "one or more isolated environments including one or more applications;"

381.   Barboy discloses limitation 1[b], which is "one or more central

processing units." This is the same as limitation 1[a] of the '038 Patent. For my

analysis of the '634 Patent limitation 1[a], I incorporate my analysis of the '038

Patent limitation 1[a].

4.   Limitation 1[c]: "one or more resource mappings between resources as requested by the one or more applications and the corresponding resources inside said isolated environments;"

382.   Barboy discloses limitation 1[c], which is "one or more resource

mappings between resources as requested by the one or more applications and the

corresponding resources inside said isolated environments."

383.   Limitation 1[c] is like limitation 14[b], which includes, "a mapping

between a resource as requested by the one or more applications and the

corresponding resource inside said isolated environments." For my analysis of

limitation 1[c], I incorporate my analysis of limitation 14[b] below.

5.   Limitation 1[d]: "wherein the one or more central processing units and the one or more isolated

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and the corresponding resource inside said isolated environments,"

418.   Barboy anticipates or renders obvious limitation 18[b]. Limitation 18[b] is worded the same as limitation 14[b]. For my analysis of limitation 18[b], I incorporate my analysis of limitation 14[b] above.

> **4.   Limitation 14[c]: "wherein said mapping is created or updated during one or more of installing an application in an isolated environment, running said application in said isolated environment, or accessing a resource corresponding to said resource mapping; and"**

419.   Barboy anticipates or renders obvious limitation 18[c]. Limitation 18[c] is worded the same as limitation 14[c]. For my analysis of limitation 18[c], I incorporate my analysis of limitation 14[c] above.

> **5.   Limitation 14[d]: "uninstalling an application of the one or more applications, wherein said uninstalling comprises one or more of removing at least one of said mappings, uninstalling said application, and removing isolated environment information from storage."**

420.   Barboy anticipates or renders obvious limitation 14[d]. Limitation 18[d] is worded the same as limitation 14[d]. For my analysis of limitation 18[d], I incorporate my analysis of limitation 14[d] above.

> **S.   '634 Patent Claim 19: The non-transitory computer readable storage medium of claim 18 comprising instructions for updating**

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the one or more isolated environments as the one or more applications use additional resources.

421.   Barboy anticipates or renders obvious claim 19.

422.   Claim 19 is like claim 16, which states, "updating the one or more isolated environments as the one or more applications use additional resources." For my analysis of limitation 19, I incorporate my analysis of claim 16 above.

   T.   '634 Patent Claim 20: The non-transitory computer readable storage medium of claim 18 comprising instructions for isolating the one or more applications from other applications and a host operating system while running within the one or more isolated environments.

423.   Barboy anticipates or renders obvious claim 20.

424.   Claim 20 is like claim 17, which states, "isolating the one or more applications from other applications and a host operating system while running within the one or more isolated environments." For my analysis of limitation 19, I incorporate my analysis of claim 16 above.

   U.   Further opinions in view of Dr. Allen Havemose's testimony

425.   Dr. Allen Havemose at his deposition stated that the wherein clauses merely referred to capabilities of the system, as opposed to what the system needed to actually be programmed or configured to accomplish. *See* Havemose Dep. Tr. at 64:1-2 ("I mean these things are really capabilities, right, the whereins."); *id.* at 66:15-17 ("Yeah, I'd say the 'Wherein' clauses, including this one, are essentially

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capabilities."). I understand this is consistent with what IBM argued before the Court, that : "The claims merely require *the system* to have the capability to perform the recited installation/uninstallation. On their face, the claims are agnostic to how these actions are triggered, whether it is via an automated process or some unclaimed user input." IBM Opening Claim Construction Brief at 8 (emphasis in original).

426.   To the extent IBM is permitted to argue this broad interpretation of the claims, the wherein clauses of the asserted claims would have been disclosed and obvious in view of virtually any prior art computing systems, because a POSITA would have been able to provide those computing systems with instructions via user inputs to cause those systems to perform the claimed functionality. That is precisely what Dr. Havemose did in building prototypes of his purported invention. *See* Havemose Dep. Tr. at 31:18-43:7, 66:24-69:4 (describing Dr. Havemose's prototype and its development, which were built on Windows Server and Linux systems which "had the capability to run and execute the code that [Dr. Havemose] provided them to perform [his] invention"). Dr. Havemose further agreed that "the techniques that [he] developed were capable of being performed on at least some Windows and Linux systems that existed before [he] came up with those techniques." Havemose Dep. Tr. at 27:3-9 ("Yeah, I believe that's a good, general way of saying it.").

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427.   A POSITA would thus, at least under Dr. Havemose's and IBM's claim interpretation, found it obvious to use pre-existing Windows Server and Linux versions that were capable of performing the functionality recited in the "wherein" clauses of the Havemose patents in combination with Barboy. These were known, pre-existing, and widely used operating systems, which would have disclosed and rendered obvious IBM and Dr. Havemose's interpretation of the "wherein" clauses of the Havemose patents.

XII. Markley Patent 9,722,858 is Obvious in view of Watt

428.   As I explain below, Watt discloses or at least makes obvious each element of claims 1–19, and thus renders these claims invalid under 35 U.S.C. § 103. For the analysis of any dependent claim, I may refer back to my analysis of the independent claim. For the analysis of the any claim elements, I may refer to analysis of a more specific dependent claim.

> **1.   Preamble: "A non-transitory computer readable medium comprising computer executable instructions which when executed by a computer cause the computer to perform the method of:"**

429.   To the extent the preamble is limiting, Watt discloses and renders obvious this claim element which recites "A non-transitory computer readable medium comprising computer executable instructions which when executed by a computer cause the computer to perform the method of" Claim 1.

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430.   Watt describes "Systems and methods for migrating a server image between any physical, virtual, and cloud servers." Watt at Abstract. Watt's "system described herein are generally implemented as a special purpose or general-purpose computer including various computer hardware as discussed in greater detail below. Embodiments within the scope of the present disclosure also **include computer-readable media for carrying or having computer-executable instructions or data structures stored thereon**. Such computer-readable media can be any available media which can be accessed by a general purpose or special purpose computer, or downloadable through communication networks. By way of example, and not limitation, such computer-readable media can comprise physical storage media such as RAM, ROM, flash memory, EEPROM, CD-ROM, DVD, or other optical disk storage, magnetic disk storage or other magnetic storage devices, any type of removable non-volatile memories such as secure digital (SD), flash memory, memory stick etc., or any other medium which can be used to carry or store computer program code in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer, or a mobile device." Watt at [0098] (emphasis added). "The computer will typically include one or more magnetic hard disk drives (also called "data stores" or "data storage" or other names) for reading from and writing to. The drives and their associated

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